

**PLATYEDRA SUBCINEREA, A POTENTIAL COTTON AND  
HOLLYHOCK PEST, DOCUMENTED IN CALIFORNIA BY  
PINK BOLLWORM PHEROMONE AND URBAN  
BLACKLIGHT SURVEYS  
(LEPIDOPTERA: GELECHIIDAE)**

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*Abstract.*—*Platyedra subcinerea* (Haworth) [= *vilella* (Zeller)], often called the ‘Cotton Stem Moth,’ is native to the Palaearctic Region but has been adventive in coastal New England since 1949. Adults began appearing in traps baited with synthetic pink bollworm pheromone in cotton fields in five counties in the San Joaquin Valley, California in 1992, at the San Francisco airport in 1994, and at lights in Berkeley in 1997. In 1999 and 2000 specimens were collected at three localities in the Sacramento Valley. Other recorded larval host plants include several Old World species of Malvaceae: *Althaea*, *Lavatera*, and *Malva*.

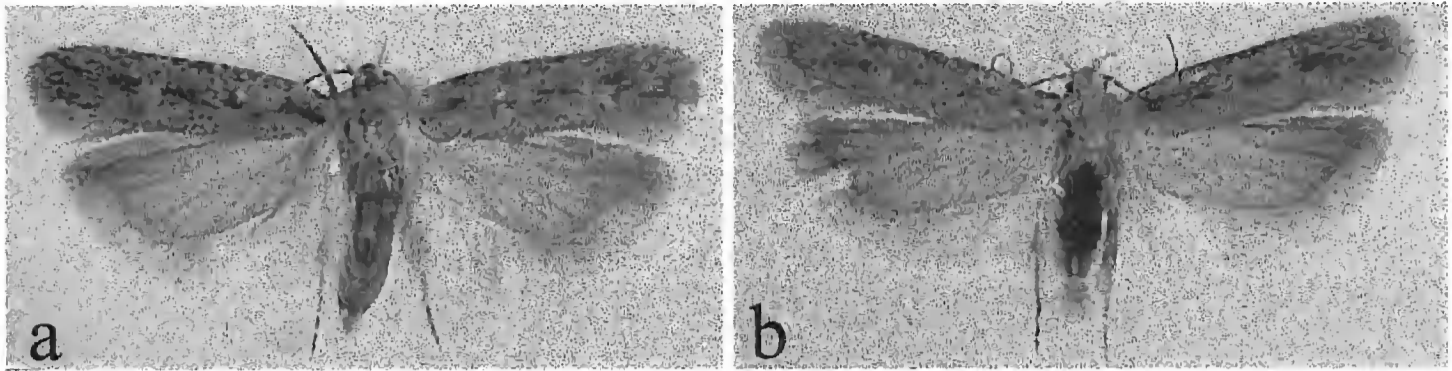
*Key Words.*—Insecta, introduced insect, mallows, *Gossypium*, Malvaceae, Palaearctic moth.

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*Platyedra subcinerea* (Haworth) was described originally from England in 1828 and placed in the genus *Recurvaria*. Later this moth was described from Italy as *Gelechia vilella* by Zeller, the species name by which it was known for more than a century until the two were recognized as synonymous by Bradley (1966). It was recorded as widespread in Europe, in Asia to northern Persia [Iran], and North Africa by Meyrick (1895), who proposed the generic name *Platyedra*.

*P. subcinerea* (cited as *vilella*) was first recognized in North America based on specimens reared from hollyhock (*Althaea rosea*, Malvaceae) at Mineola, Nassau Co., New York in 1951 and 1952 (Anonymous 1953a). However, the introduction had occurred earlier; the species was already widely distributed in coastal New England, evidenced by specimens collected at Barnstable and West Barnstable, Barnstable Co., Massachusetts by C. P. Kimball in 1949–1951, the earliest 24 April 1949 (USNM, Brown in litt.). Surveys by the USDA during the summer of 1953 recorded *P. subcinerea* in Massachusetts, Connecticut, and widespread on Long Island, New York (Anonymous 1953b). After a decade, Okumura (1961) mapped the occurrence of *subcinerea* in New England, adding New Jersey, based on USDA records. Later collections include Portsmouth, Rockingham Co., New Hampshire, in 1965 and Hamden, New Haven Co., Connecticut in 1968 (USNM, Brown in litt.).

**Occurrence in California.**—*Platyedra subcinerea* was first detected in California in 1992, but its identity was not recognized at the time. Male moths were captured in sticky traps baited with sex attractant for *Pectinophora gossypiella* (Saunders) (Pink Bollworm, PBW). The Cooperative Pink Bollworm Program, a unique integrated pest control project administered by the California State Department of Food and Agriculture and funded almost entirely by assessments on the cotton growers, has been in continual operation since 1967. Probably the most successful and longest running biological control program in the world, this pro-



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Figure 1. Adult female (a) and male (b) of *Platyedra subcinerea* (Haworth), Berkeley, California.

ject effectively protects more than a million acres of cotton valued at nearly a billion dollars annually. In lieu of pesticides, sterile Pink Bollworm moths are released to overwhelm potential new populations of *P. gossypiella*.

To determine when to release sterile moths and monitor the releases, approximately 20,000 pheromone bait traps are deployed around an average of ca. 1,200,000 acres of cotton fields. They are inspected weekly from April through October. According to Marjorie Moody, Associate Insect Biosystematist and Supervisor of the PBW Identification Laboratory, CDFA, the first specimens of *P. subcinerea* were collected by Mark Spenhoff in Merced County in 1992. Moody stated, "We watched these moths spread [within one season] from Merced Co. south until they became general all over [the San Joaquin Valley]. We are still finding them [as of July 2000]. We know of no finds earlier than 1992."

In 1994 males were captured at the San Francisco Airport in traps baited with sex attractant lure for *Spodoptera litura* (F.) (Noctuidae) by the USDA Exotic Pest Survey at ports of entry.

*Platyedra subcinerea* first appeared in urban settings at Berkeley in 1997. We conducted nightly inventory of moths attracted to lights on most dates when we were in residence, near the north edge of the city from 1978 to present (JAP) and at a site 3.25 km to the south from 1996 to 1999 (FAHS). This surveillance has revealed colonization by six species of exotic moths between 1983 and 1997 (Powell 1992, Powell & Passoa 1991, Powell et al. 2001). In 1997 we began observing *P. subcinerea*, the first in north Berkeley on April 18, and it was taken on five dates that year, including once at the Sperling site on July 1. We recorded *subcinerea* six times in 1998 and eight in 1999, between 27 February and 11 September, indicating established residency.

In 1999 *P. subcinerea* was collected in the Sacramento Valley at two localities: one specimen in March at house lights in Sacramento by W. D. Patterson and one in June at Davis, Yolo Co., where J. A. De Benedictis began continuous monitoring of moths at blacklight in a suburban yard in early 1998. These places are about 105 km NE and 88 km NNE of Berkeley, respectively, and 115 km NW of the northernmost pink bollworm survey site in Merced County.

**Identification.**—We compared specimens to diagnoses given by Meyrick (1895) and Piskunov (1990) and to illustrations of the male genitalia shown by Pierce & Metcalfe (1935) and Piskunov. We compared moths and dissections of both sexes with specimens from Massachusetts that had been identified by R. W. Hodges. *Platyedra subcinerea* (Figs. 1a, 1b) is a small (FW length 7.5–9.0 mm),

nondescript moth that superficially resembles some species of *Filatima* and *Anacamptis*, as well as the closely related *Pectinophora gossypiella*. It is paler than *P. gossypiella*, having tan forewings faintly mottled with dark brownish that in fresh examples tends to define a median longitudinal streak and two discal stigmata at the end of the cell. There is a small darker brown smudge at the base of the costa. California specimens are consistently tan in appearance, while Piskunov states the FW color is variable in Russian specimens, chocolate brown to gray. The genitalia (Figs. 2–4) are distinctive among California Gelechiidae. For preliminary diagnosis, *Platyedra* can be distinguished from most other superficially similar gelechiids by its antennal pecten, a row of large, erect scales along the venter of the antennal scape. *Pectinophora* and most *Bryotropha* species are the only other North American Gelechiidae that possess this feature.

Key characteristics of the larvae have been illustrated by Capps (1958) and Okumura (1961).

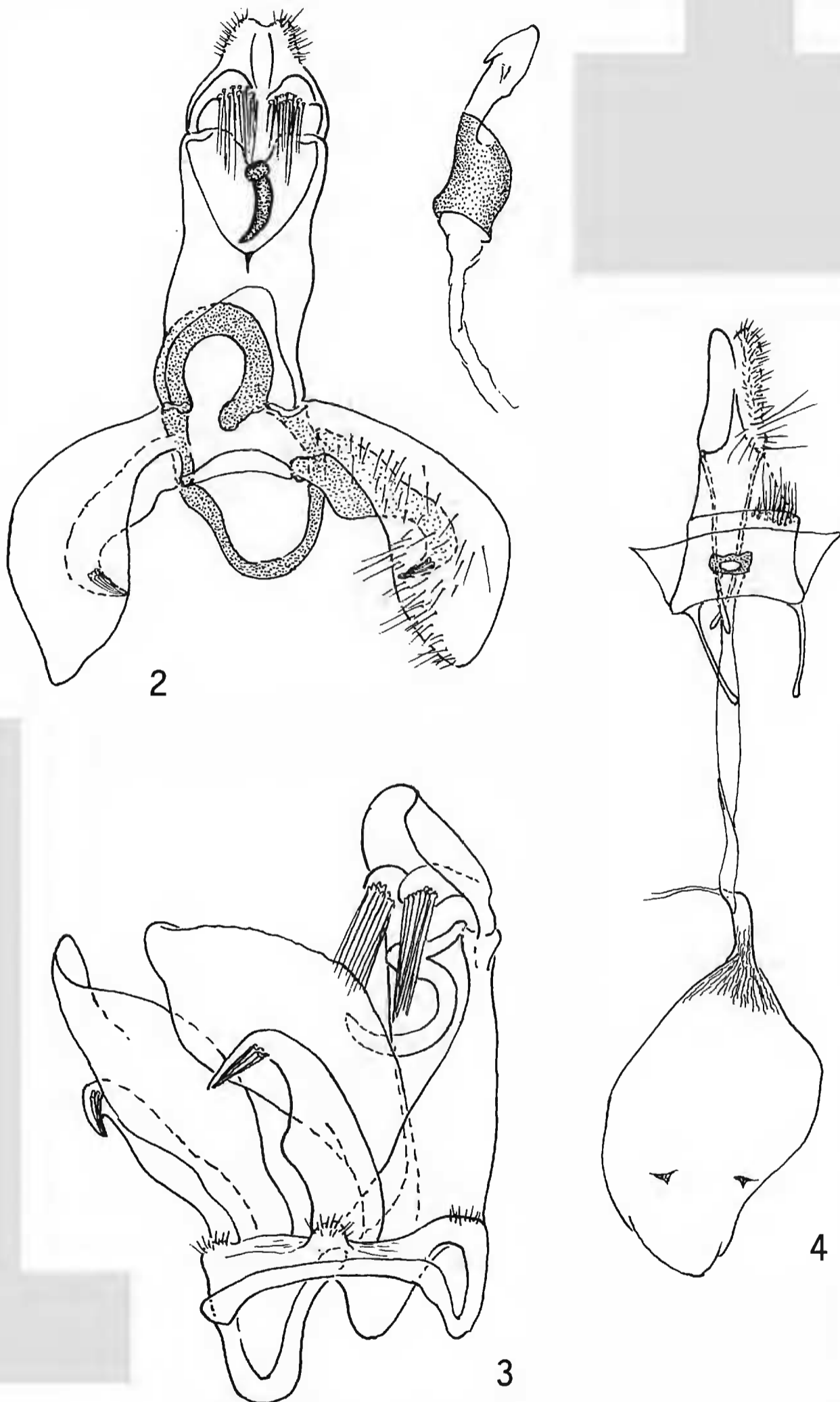
**Biology.**—In larval feeding *Platyedra subcinerea* is a specialist on Malvaceae. Meyrick (1895) described the life cycle in England: larvae feed in the flowers and seeds of *Malva sylvestris* in June and July, and the adults emerge in August and overwinter until May. Damage to cultivated cotton (*Gossypium herbaceum*) and other genera of Malvaceae was attributed to this species in North Africa and the Middle East in the 1920s and 1930s, where populations are multivoltine (Mimeur 1930, Yakhontov 1931, Goloviznin 1937). The common name, Cotton Stem Moth, evidently was coined after translation from Yakhontov's account in Russian.

The larvae of *P. subcinerea* fed in flowers and seed capsules of cotton plants in Morocco where they were grown adjacent to wild *Lavatera arborea* (Mimeur 1931). In western Uzbekistan [Uzbek SSR], first generation larvae mined the growing tips, then the stems of *Althaea officinalis* (Yakhontov 1931). Second generation larvae fed in cotton in the same manner, causing plants to become dwarfed and to spread horizontally. Goloviznin (1937) also reported first generation larvae confined to wild Malvaceae and later generations on cotton in northern Persia [Iran]. He observed five generations annually, and larvae fed chiefly in the fruit but sometimes in young stems.

In addition to cotton and hollyhock, the array of Malvaceae serving as larval host plants was summarized as: *Althaea nudiflora*, marsh mallow (*A. officinale*), velvet tree mallow (*Lavatera arborea*), herb tree mallow (*L. trimestris*), and high mallow (*Malva sylvestris*) (Anonymous 1953a, Okumura 1961). All of these are Eurasian and Mediterranean natives.

Likely larval hosts in Berkeley include three ornamental plants: *Lavatera assurgentiflora*, a native to the California Channel Islands, the Old World tree mallow, *L. thuringiacea*, and hollyhock. Cheeseweed (*Malva parviflora*) also may serve as a host. The long flight period in California, late March to late July in 1999, suggests two or more generations. We have not confirmed overwintering adults, although single specimens taken in February and September may have been reproductively dormant individuals.

**Specimens examined.**—CALIF: *Alameda Co.*, Berkeley, IV.18.97, V.18.97, VII.1.97, VII.26-28.97 [JAP slide 7939 female], IV.21.98 [JAP slide 7775 male], V.18.98, VI.19.98, VII.19.98, IX.11.98, II.27.99, III.28.99, IV.13-21.99 (5 dates), VII.28.99; *Fresno Co.* 1.6 km E Camden, VI.14.93, 1.6 km W Firebaugh, VII.7.93, 3.2 km NW Firebaugh, VII.8.93, 8 km SW Firebaugh, VI.22.93, 3.2



Figures 2–4. Genitalia structures of *P. subcinerea*: 2, male, ventral aspect, valvae bent anteriorly and vinculum distorted, aedeagus removed and shown to right (slide JAP 7775); 3, male, lateral aspect, aedeagus removed (JAP 8012); 4, female, ventral aspect (JAP 7939).

km SE Five Points, VII.1.92, 3.2 km S Huron, VI.21.93, 4.8 km N Huron, VII.8.93, 1.6 km W Malaga, VII.13.92, E jct. I-5 & Panoche Rd., VII.14.93, 1.6 km S jct. I-5 & Shields Rd., VI.21.93, 1.6 km W Tranquility, VI.23.93, 1.6 km S Tranquility, VI.23.93, 4.8 km SW Tranquility, VI.15.93; *Kern Co.*, 4.3 km W Delano, VII.14.93, nr. Mettler, VII.7.92; *Kings Co.*, 1.6 km N Corcoran, VII.9.93, 3.2 km NE Stratford, VII.8.93; *Madera Co.*, 9.7 km SW Chowchilla, VII.15.92; *Merced Co.*, 8 km S Atwater, VI.17.93, 13 km SW Atwater, VI.17.93, Dos Palos, VII.9-14.93, 4.8 km SE El Nido, VII.8.92, 8 km W Gustine, VII.8.93, 9.7 km SW Gustine, VI.25.92, VI.17.93, 11.3 km S Gustine, VI.22.93, Los Banos, VII.13.93, 3.2 km NW Los Banos, VII.1.92, 6.4 km SW Los Banos, VII.7.93, 9.7 km S Los Banos, VII.7.93, 9.7 km SE Los Banos, VII.13.93, 13 km W Los Banos, VI.23.93, 16 km SW Merced, VI.23.93, Santa Rita Park, VII.15.93, 1.6 km SW Santa Rita Park, VI.17.93, VII.13.93; *Sacramento Co.*, Sacramento, III.20.99 (W.D. Patterson); *San Mateo Co.*, San Francisco Airport, VI.17.94; *Tulare Co.*, 14.5 km SE Earlimart, VI.18.92; *Yolo Co.*, Davis, VI.17.99 [JAP slide 8012 male], III.15.2000 (J. A. De Benedictis). MASS: *Barnstable Co.*, Barnstable, V.30.59 [JAP slide 7936 male], West Barnstable, IV.30.49 [JAP slide 7937 female] (C. P. Kimball).

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